



SEQUENCE LISTING

<110> Meng, Xiang-Jin  
Fenaux, Martijn  
Halbur, Patrick G.

<120> Chimeric Infectious DNA Clones, Chimeric Porcine Circoviruses and  
Uses Thereof

<130> AM100878 CIP

<140> 10/808,964

<141> 2004-03-25

<160> 32

<170> PatentIn version 3.2

<210> 1  
<211> 1768  
<212> DNA  
<213> Porcine circovirus

<400> 1  
aaatttctga caaacgttac agggtgctgc tctgcaacgg tcaccagact cccgctctcc 60  
aacaaggta tcacagcagt agacaggtca ctccgttgtc cttgagatcg aggagctcca 120  
cattcaataa gtaagttgcc ttctttactg caatattctt tattctgctg atcagttcct 180  
ttggctttct cgatatggca gcgggcaccc aaataccact tcactttatt aaaagttgc 240  
ttcttcacaa aattagcgaa cccctggagg tgaggtgttc gtccttcctc attaccctcc 300  
tcgccaacaa taaaataatc aaatagggag attggagact cccgtatttt cttgcgctcg 360  
tcttcggaag gattattcag cgtgaacacc cacctttat gtggttgggg tccgcttctt 420  
ccattttct tgctggcat gttgctgctg aggtgctgcc gaggtgctgc cgctgccgaa 480  
gtgcgctggt aatacttaca gcgcacttct ttcgtttca gctatgacgt atccaaggag 540  
gcgttaccgc agaagaagac accggccccc cagccatctt ggccagatcc tccgcccgg 600  
ccctggctc gtccacccccc gccaccgcta ccgttggaga agaaaaatg gcatttcaa 660  
caccggcctc tcccgaccc tccgatatac tgtcaaggct accacagtca gaacggccctc 720  
ctggcggtg gacatgatga gatttaatat tgacgacttt gttccccgg gaggggggac 780  
caacaaaatc tctataccct ttgaatacta cagaataaga aaggtaagg ttgaattctg 840  
gccctgctcc cccatcaccc agggtgatag gggagtgggc tccactgctg ttattctaga 900  
tgataactt gtaacaaagg ccacagccct aacctatgac ccatatgtaa actactcctc 960  
ccgcataaca atcccccaac ctttcctca ccactccgt tacttcacac ccaaacctgt 1020

|  |      |
|--|------|
| tcttgactcc accattgatt acttccaacc aaataacaaa aggaatcagc tttggatgag  | 1080 |
| gctacaaaacc tctagaaatg tggaccacgt aggcctcggc actgcgttcg aaaacagtat | 1140 |
| atacgaccag gactacaata tccgtgtaac catgtatgta caattcagag aatttaatct  | 1200 |
| taaagacccc ccacttaaac cctaaatgaa taataaaaac cattacgaag tgataaaaaa  | 1260 |
| gactcagtaa tttatccat atggaaattc agggcatggg gggaaaggg tgacgaactg    | 1320 |
| cccccttcc tccgtggatt gttctgtac attcttccaa aataccaaga aagtaatcct    | 1380 |
| ccgatagaga gcttctacag ctggacagc agttgaggag taccattcca acgggtctg    | 1440 |
| attgctggta atcagaatac tgcccacaa aaaaggtaca gttccacctt tagtctctac   | 1500 |
| agtcaatgga tatcgatcac acagtctcag tagatcatcc cacggcagcc agccataaaa  | 1560 |
| gtcatcaata acaaccactt cttcaccatg gtaaccatcc caccacttgt ttctaggtgg  | 1620 |
| tttccagtat gtggtttccg ggtctgcaaa attagcagcc catttgcttt taccacaccc  | 1680 |
| aggtggcccc acaatgacgt gtacattggc cttccaatca cgcttctgca tttcccgct   | 1740 |
| cactttcaaa agttcagccca gcccgcgg                                    | 1768 |

<210> 2  
 <211> 1773  
 <212> DNA  
 <213> Porcine circovirus

|   |     |
|---|-----|
| <400> 2   |     |
| ggtacctccg tggattgtc tccagcagtc ttccaaaatt gcaaagtagt aatcctccga    | 60  |
| tagagagctt ctacagctgg gacagcagtt gaggagtacc attcctgggg ggcctgattg   | 120 |
| ctggtaatca aaatactgca ggcacaaaaa ggaacagtagc ccccttttagt ctctacagtc | 180 |
| aatggatacc ggtcacacag tctcagtaga tcatcccaag gtaaccagcc ataaaaatca   | 240 |
| tccaaaacaa caacttctc tccatgatat ccattccacc acttatttct actaggcttc    | 300 |
| cagtaggtgt ccctaggctc agcaaaatta cgggcccact ggcttccc acaaccggc      | 360 |
| gggcccacta tgacgtgtac agctgtctc caatcacgct gctgcatctt cccgctcact    | 420 |
| ttcaaaagtt cagccagccc gcggaaattt ctcacatacg ttacaggaaa ctgctcgct    | 480 |
| acagtcacca aagacccgt ctccaaaagg gtactcacag cagtagacag gtcgctgcgc    | 540 |
| ttcccttgtt tccgcggagc tccacactcg ataagtatgt ggccttctt actgcagtt     | 600 |
| tctttattct gctggtcggt tccttcgct ttctcgatgt ggcagcgggc accaaaaatac   | 660 |
| cacttcaccc tggtaaaagt ctgcttctt gcaaaaattcg caaacccctg gaggtgagga   | 720 |
| gttctaccct cttccaaacc ttcctcgcca caaacaataat aatcaaaaag ggagattgga  | 780 |

|            |            |            |            |            |            |      |
|------------|------------|------------|------------|------------|------------|------|
| agctcccgta | ttttgtttt  | ctcctcctcg | gaaggattat | taagggtgaa | cacccacctc | 840  |
| ttatggggtt | gcgggcccgt | tttcttgctt | ggcattttca | ctgacgctgc | cgaggtgctg | 900  |
| ccgctgccga | agtgcgctgg | taatactaca | gcagcgcact | tcttcactt  | ttataggatg | 960  |
| acgtatccaa | ggaggcgta  | ccgcagaaga | agacaccgcc | cccgagccca | tcttgccag  | 1020 |
| atcctccgcc | gccgcccctg | gctcgccac  | ccccgccacc | gctaccgtt  | gagaaggaaa | 1080 |
| aatggcatct | tcaacacccg | cctctcccgc | acttcggat  | atactgtcaa | ggctaccaca | 1140 |
| gtcagaacgc | cctcctggc  | ggtggacatg | atgagattt  | atattgacga | ctttgttccc | 1200 |
| ccgggagggg | ggaccaacaa | aatctctata | cccttgaat  | actacagaat | aagaaaggtt | 1260 |
| aagggttaat | tctggccctg | ctccccatc  | acccagggtg | ataggggagt | gggctccact | 1320 |
| gctgttattc | tagatgataa | ctttgtaaca | aaggccacag | ccctaaccta | tgaccatata | 1380 |
| gtaaactact | cctccgc    | tacaatcccc | caacccttct | cctaccactc | ccgttacttc | 1440 |
| acacccaaac | ctgttcttga | ctccaccatt | gattactcc  | aaccaataa  | caaaaggaat | 1500 |
| cagcttgga  | tgaggctaca | aacctctaga | aatgtggacc | acgtaggcct | cggcactg   | 1560 |
| ttcgaaaaca | gtatatacga | ccaggactac | aatatccgt  | taaccatgt  | tgtacaattc | 1620 |
| agagaattt  | atcttaaaga | ccccccactt | aaaccctaaa | tgaataaaaa | taaaaaccat | 1680 |
| tacgatgtga | taacaaaaaa | gactcagtaa | tttattttat | atgggaaaag | ggcacagggt | 1740 |
| gggtccactg | cttcaaatcg | gccttcgggt | acc        |            |            | 1773 |

<210> 3  
 <211> 702  
 <212> DNA  
 <213> Porcine circovirus

|         |            |            |            |            |            |            |     |
|---------|------------|------------|------------|------------|------------|------------|-----|
| <400> 3 | atgacgtatc | caaggaggcg | ttaccgcaga | agaagacacc | gccccgcag  | ccatcttggc | 60  |
|         | cagatcctcc | gccgccc    | ctggctcg   | caccccgcc  | accgctaccg | ttggagaagg | 120 |
|         | aaaaatggca | tcttcaacac | ccgcctctcc | cgcac      | tttgc      | caaggctacc | 180 |
|         | acagtcagaa | cgcctc     | ggcgg      | atgatgagat | ttaatattga | cgactt     | 240 |
|         | ccccggag   | gggg       | acc        | aaaaatctct | ataccctt   | aataagaaag | 300 |
|         | gttaagg    | tttctgg    | ctgct      | atcacc     | gtgatag    | agtgg      | 360 |
|         | actgctgtt  | ttct       | taactt     | acaaagg    | cagcc      | ctatgac    | 420 |
|         | tatgt      | actc       | ccata      | cccc       | tct        | ctcc       | 480 |

|   |     |
|---|-----|
| ttcacaccca aacctgttct tgactccacc attgattact tccaaccaaa taacaaaagg | 540 |
| aatcagctt ggatgaggct acaaacctct agaaatgtgg accacgtagg cctcggcact  | 600 |
| gcgttcgaaa acagtatata cgaccaggac tacaatatcc gtgtaaccat gtatgtacaa | 660 |
| ttcagagaat ttaatcttaa agaccccccctt cttaaaccctt aa                 | 702 |
|   |     |
| <210> 4   |     |
| <211> 233   |     |
| <212> PRT   |     |
| <213> Porcine circovirus  |     |
|   |     |
| <400> 4   |     |
| Met Thr Tyr Pro Arg Arg Arg Tyr Arg Arg Arg Arg His Arg Pro Arg   |     |
| 1 5 10 15   |     |
|   |     |
| Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro   |     |
| 20 25 30  |     |
|   |     |
| Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg   |     |
| 35 40 45  |     |
|   |     |
| Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Ala Thr Thr Val Arg Thr   |     |
| 50 55 60  |     |
|   |     |
| Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asp Asp Phe Val   |     |
| 65 70 75 80   |     |
|   |     |
| Pro Pro Gly Gly Thr Asn Lys Ile Ser Ile Pro Phe Glu Tyr Tyr       |     |
| 85 90 95  |     |
|   |     |
| Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr   |     |
| 100 105 110   |     |
|   |     |
| Gln Gly Asp Arg Gly Val Gly Ser Thr Ala Val Ile Leu Asp Asp Asn   |     |
| 115 120 125   |     |
|   |     |
| Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr   |     |
| 130 135 140   |     |
|   |     |
| Ser Ser Arg His Thr Ile Pro Gln Pro Phe Ser Tyr His Ser Arg Tyr   |     |
| 145 150 155 160   |     |
|   |     |
| Phe Thr Pro Lys Pro Val Leu Asp Ser Thr Ile Asp Tyr Phe Gln Pro   |     |
| 165 170 175   |     |

Asn Asn Lys Arg Asn Gln Leu Trp Met Arg Leu Gln Thr Ser Arg Asn  
180 185 190

Val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp  
195 200 205

Gln Asp Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe  
210 215 220

Asn Leu Lys Asp Pro Pro Leu Lys Pro  
225 230

<210> 5  
<211> 30  
<212> DNA  
<213> Porcine circovirus

<400> 5  
gaaccgcggg ctggctgaac ttttggaaagt 30

<210> 6  
<211> 30  
<212> DNA  
<213> Porcine circovirus

<400> 6  
gcaccgcgga aatttctgac aaacgttaca 30

<210> 7  
<211> 21  
<212> DNA  
<213> Porcine circovirus

<400> 7  
tttggtaccc gaaggccgat t 21

<210> 8  
<211> 24  
<212> DNA  
<213> Porcine circovirus

<400> 8  
attggtaacct ccgtggattg ttct 24

<210> 9  
<211> 39  
<212> DNA  
<213> Porcine circovirus

|   |  |    |
|---|--|----|
| <400> 9                                     |  |    |
| gaagttaacc ctaaatgaat aaaaataaaaa accattacg |  | 39 |
| <210> 10                                    |  |    |
| <211> 37                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 10                                    |  |    |
| ggtggcgccct cttggatac gtcatcctat aaaagtg    |  | 37 |
| <210> 11                                    |  |    |
| <211> 30                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 11                                    |  |    |
| aggttataag tgggggtct ttaagattaa             |  | 30 |
| <210> 12                                    |  |    |
| <211> 27                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 12                                    |  |    |
| ggaaacgtta ccgcagaaga agacacc               |  | 27 |
| <210> 13                                    |  |    |
| <211> 35                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 13                                    |  |    |
| actatagatc tttattcatt tagagggtct ttcag      |  | 35 |
| <210> 14                                    |  |    |
| <211> 29                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 14                                    |  |    |
| tacgggcatg catgacgtgg ccaaggagg             |  | 29 |
| <210> 15                                    |  |    |
| <211> 36                                    |  |    |
| <212> DNA                                   |  |    |
| <213> Porcine circovirus                    |  |    |
| <400> 15                                    |  |    |
| agacgagatc tatgaataat aaaaaccatt acgaag     |  | 36 |

|                                   |  |    |
|-----------------------------------|--|----|
| <210> 16                          |  |    |
| <211> 31                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 16                          |  |    |
| cgtaagcatg cagctgaaaa cgaagaagt g |  | 31 |
| <br>                              |  |    |
| <210> 17                          |  |    |
| <211> 24                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 17                          |  |    |
| gctgaacttt tgaaagttag cggg        |  | 24 |
| <br>                              |  |    |
| <210> 18                          |  |    |
| <211> 26                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 18                          |  |    |
| tcacacagtc tcagtagatc atccca      |  | 26 |
| <br>                              |  |    |
| <210> 19                          |  |    |
| <211> 21                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 19                          |  |    |
| ccaactttgt aacccctcc a            |  | 21 |
| <br>                              |  |    |
| <210> 20                          |  |    |
| <211> 18                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 20                          |  |    |
| gtggacccac cctgtgcc               |  | 18 |
| <br>                              |  |    |
| <210> 21                          |  |    |
| <211> 20                          |  |    |
| <212> DNA                         |  |    |
| <213> Porcine circovirus          |  |    |
| <br>                              |  |    |
| <400> 21                          |  |    |
| ccagctgtgg ctccatcaa              |  | 20 |
| <br>                              |  |    |
| <210> 22                          |  |    |
| <211> 29                          |  |    |
| <212> DNA                         |  |    |

|                                   |    |
|-----------------------------------|----|
| <213> Porcine circovirus          |    |
| <400> 22                          | 29 |
| ttcccatata aaataaaatta ctgagtcctt |    |
| <210> 23                          |    |
| <211> 19                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 23                          | 19 |
| cagtcagaac gccctcctg              |    |
| <210> 24                          |    |
| <211> 22                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 24                          | 22 |
| cctagaaaaca agtgggtggga tg        |    |
| <210> 25                          |    |
| <211> 19                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 25                          | 19 |
| ttgttaacaaa ggccacagc             |    |
| <210> 26                          |    |
| <211> 23                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 26                          | 23 |
| gtgtgatcga tatccattga ctg         |    |
| <210> 27                          |    |
| <211> 16                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 27                          | 16 |
| tccgaagacg agcgca                 |    |
| <210> 28                          |    |
| <211> 23                          |    |
| <212> DNA                         |    |
| <213> Porcine circovirus          |    |
| <400> 28                          | 23 |
| gaagtaatcc tccgatagag agc         |    |

|                                 |    |
|---------------------------------|----|
| <210> 29                        |    |
| <211> 29                        |    |
| <212> DNA                       |    |
| <213> Porcine circovirus        |    |
| <400> 29                        |    |
| gttacaaagt tatcatctag aataacagc | 29 |
| <210> 30                        |    |
| <211> 18                        |    |
| <212> DNA                       |    |
| <213> Porcine circovirus        |    |
| <400> 30                        |    |
| attagcgaac ccctggag             | 18 |
| <210> 31                        |    |
| <211> 24                        |    |
| <212> DNA                       |    |
| <213> Porcine circovirus        |    |
| <400> 31                        |    |
| agagactaaa ggtggaactg tacc      | 24 |
| <210> 32                        |    |
| <211> 18                        |    |
| <212> DNA                       |    |
| <213> Porcine circovirus        |    |
| <400> 32                        |    |
| aggggggacc aacaaaat             | 18 |